

March 10, 1955

Professor John von Neumann
Institute for Advanced Study
Princeton, N.J.

Dear Professor von Neumann:

I have heard several intimations from my reading and discussions with friends (e.g. Professor Sol Spiegelman) that you have contributed to the problem of the minimum information required for "self-reproduction" or to related problems pertinent to genetic theory.

Are your considerations recorded in print? If so, I would be indebted to you for the literature citations, or, if available, to any reprints. I have access to several sources of mathematical advice, if the techniques are beyond my own means.

In connection with my own more mundane research on genetics of bacteria and viruses, I have had occasion to feel rather uncomfortable at the adequacy of the genetical concept of "self-reproduction", or rather at the operations by which this is inferred for any sub-cellular particle, and I am therefore hoping to reexamine the problem afresh. Since most intracellular particles will not reproduce at all outside the context of a given kind of cell, the criteria for the capacity of "self-reproduction" of individual genes, etc., may be grossly deficient.

Yours sincerely,

Joshua Lederberg
Professor of Genetics